

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims

1. (original) A system for determining a temperature of exhaust gases from an engine, comprising:
 - an exhaust gas sensor having an electric heating coil, said sensor communicating with the exhaust gases;
 - an electrical circuit for generating a signal indicative of the resistance of said heating coils when said coil is not energized; and
 - a controller receiving said signal and calculating said temperature of said exhaust gases based on said signal.
2. (original) The system of claim 1 wherein said electrical circuit comprises a Wheatstone bridge circuit operatively coupled to said exhaust gas sensor.
3. (original) A method for determining a temperature of exhaust gases from an engine, comprising:
 - generating a signal indicative of a resistance of a heating coil in an exhaust gas sensor when said coil is not energized; and
 - calculating a temperature of the exhaust gases based on said signal.

4. (original) A system for determining a temperature difference of exhaust gases from an engine, the engine being coupled to an emission catalyst, the system comprising:

a first exhaust gas sensor having a first electric heating coil, said first sensor communicating with exhaust gases upstream of the catalyst;

a second exhaust gas sensor having a second electric heating coil, said second sensor communicating exhaust gases downstream of the catalyst;

a first electrical circuit generating a first signal indicative of a resistance of said first heating coil when said first coil is not energized;

a second electrical circuit generating a second signal indicative of the resistance of said second heating coil when said second coil is not energized; and,

a controller calculating a temperature difference between exhaust gases communicating with said first and second exhaust gas sensors based on said first and second signals.

5. (original) A system for determining a temperature difference of exhaust gases form an engine, the engine being coupled to an emission catalyst, the system comprising:

a first exhaust gas sensor having a first electric heating coil, said first sensor communicating with exhaust gases upstream of the catalyst;

a second exhaust gas sensor having a second electric heating coil, said second sensor communicating exhaust gases downstream of the catalyst;

an electrical circuit generating a first signal based on both a resistance of said first sensor heating coil and a resistance of said second sensor heating coil; and

a controller calculating a temperature difference between exhaust gases communicating with said first and second exhaust gas sensors based on said first signal.

6. (new) A method for determining oxygen content and at least one exhaust gas temperature of exhaust gas of an internal combustion engine having an exhaust gas system, including a catalytic converter through which the exhaust gas passes, which comprises the steps of:

(a) providing an oxygen sensor disposed in the exhaust gas system, the oxygen sensor having an oxygen-sensitive region for detecting oxygen content in the exhaust gas and a temperature-sensitive region for detecting a temperature of the exhaust gases;

(b) detecting the oxygen content of the exhaust gas;

(c) detecting a first exhaust gas temperature by determining an electrical conductivity of a conductor structure of the oxygen sensor.

7. (new) The method of claim 6 wherein in step (c) the first exhaust gas temperature is determined as the internal combustion engine is warming up.

8. (new) The method of claim 6 comprising the further step of comparing the first exhaust gas temperature with a second exhaust gas temperature.

9. (new) The method of claim 7 comprising the further step of comparing the first exhaust gas temperature with a second exhaust gas temperature.

10. (new) A method for determining oxygen content and temperature of exhaust gas of an internal combustion engine having a catalytic converter through which exhaust gas passes, wherein, as the internal combustion engine is warming up, an electrical conductivity of a conductor structure of the oxygen sensor assigned to the catalytic converter is measured, and a first exhaust gas temperature is determined from this measurement.

11. (new) The method of claim 10 further comprising comparing the first exhaust gas temperature with a second exhaust gas temperature.

12. (new) An apparatus for monitoring an exhaust gas catalytic converter arranged in an exhaust pipe of an internal combustion engine, comprising:

an oxygen sensor disposed in the exhaust pipe, the oxygen sensor having an oxygen-sensitive region for detecting oxygen content of the exhaust gas and a temperature-sensitive region for detecting a temperature of the exhaust gas; and

a control unit adapted to receive signals from the oxygen sensor corresponding to a detected exhaust gas temperature,

wherein the control unit has at least two modes including a first operating mode for operating the oxygen sensor as a temperature sensor which determines the exhaust gas temperature and a second operating mode for determining the oxygen content of the exhaust gas.

13. (new) The apparatus of claim 12 wherein the control unit is further adapted to receive signals from the oxygen sensor corresponding to a detected oxygen content.

14. (new) The apparatus of claim 12, further comprising:

a second oxygen sensor disposed in the exhaust pipe upstream of the catalytic converter,
wherein the first oxygen sensor is disposed in one of the catalytic converter and the
exhaust gas pipe downstream of the catalytic converter.